April 5, 2012

Kathleen Baskin, P.E.
Director of Water Policy
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th floor
Boston, MA 02114

RE: Comments on Draft SWMI Framework released by EEA on February 3, 2012

Dear Ms. Baskin:

Massachusetts is fortunate to have a large number of conscientious, technically trained, ethical, environmentally conscious and civic minded water professionals who take great pride in their deep knowledge of the geology and environmental conditions across the Commonwealth. These professionals have either been actively involved in the SWMI process or following it closely for the duration. A substantial number of these professionals are concerned that the science reviewed during the SWMI process does not support the regulatory direction proposed by EEA.

A careful review of the science and the underlying data has led many of us to conclude that the proposed changes to the regulatory framework under the Water Management Act (WMA) does not put the focus on water quality where it belongs and thus cannot: 1) significantly improve or even maintain the current quality of aquatic ecosystems of our state's streams or 2) improve stream flows in the small number of streams that are known to be impacted by water withdrawals. In addition, the implementation of these WMA changes will contribute to the continued degradation of the Commonwealth's existing water supply infrastructure and make meaningful planning for future water resources management nearly impossible.

For the nearly 25 years preceding the SWMI process, the prevailing assumption among the environmental advocate groups and EEA staff was that the growth of public water supplies in the Commonwealth (which essentially ended 15 years ago) was contributing to serious and widespread decreases in stream flows and that those reductions were endangering other uses of the streams such as navigation, fishing, recreation and fish habitat. This unsubstantiated but highly promoted assumption has been the basis for water management regulations in Massachusetts for over 20 years, despite a complete lack of documented scientific basis for these assertions. Over the last two years, new scientific analysis that contradicts this preconception has been routinely ignored or misinterpreted during the SWMI process. Below are some significant examples.

In 2010, as part of the SWMI process, the USGS presented the results of a state-wide analysis of stream flows that showed that flow alterations in Massachusetts streams are far more limited than assumed by EEA staff and watershed associations (Weiskel and others, 2009). Stream flow alterations were predicted by the USGS in a relatively small percentage of streams and only during the lowest flow periods – August flows. Of the 1,400 sub-basins examined, only 13%

showed flow decreases greater than 10%, a degree of alteration that in most streams cannot be reliably measured. Roughly the same number of streams showed increases in flow.

This demonstration of the limited and localized nature of stream flow declines undermines the primary impetus for SWMI and should have completely altered the focus of the process. But it did not. In spite of the new data, the SWMI focus remained on using the WMA to limit and reduce public water supply use statewide.

If there is any scientific data to support the assumption that the types of water supply reductions proposed by the framework will be effective as a means of improving stream flow, none have been presented. But there are two studies paid for by the Commonwealth and conducted by the USGS (Zimmerman and others, 2010) (Zarriello, 2001) that unequivocally demonstrate that the types of water conservation and water supply reduction methods proposed by EEA would be completely ineffective as a way to increase stream flows. Both studies evaluated potential stream flow improvements of drastic reductions in water use. The results were not just disappointing, they indicate that the water use reductions had an insignificant impact on stream flows. There has been no demonstration of an environmental benefit (let alone a cost/benefit) to EEA's Proposal. Nor has anyone at EEA or USGS conducted any analysis demonstrating the effectiveness of the proposed changes.

At some point in the discussion of water management the focus turned from balancing water use (as required by the WMA) to evaluating impacts on a single environmental factor – administratively (not scientifically) designated fluvial fish. The impacts of selected anthropogenic parameters on species richness and relative abundance of designated fluvial fish were evaluated in a USGS study (Armstrong and others, 2010 and 2012). The study reported that fish counts were associated with two of the selected factors – alterations in August stream flows and percent impervious surface in the watershed. However, no evaluation was done that demonstrates a "cause and effect" relationship and there has been no validation of the statistical associations.

Nevertheless, significant findings in the USGS study include: 1) increases in August low flows appear to be almost as detrimental to fluvial fish as decreases and 2) the potential impacts of percent impervious surface appear to be approximately five times greater than stream flow alterations. The potential impacts of public water withdrawals were never evaluated directly.

The implications of this study are startling when compared to the proposed water management solutions proposed by EEA. It appears that the water quality impacts associated with urbanization are the primary anthropogenic factor reducing the abundance of fluvial species. This likely accounts for the fact that increased stream low flows are detrimental to fluvial fish – within the range of frequently recurring variations in flow, the quality of the water is far more important than the quantity of flow.

It is difficult to see how the proposed changes to the WMA could possibly be based on the results of these recent scientific studies. What is certain is that there is no scientific basis for the assumption that EEA's proposed changes to the Water Management Act regulatory framework will result in a meaningful or measurable increase in August stream flows at any stream. There

is also no scientific basis for the assumption that EEA's proposed changes to the Water Management Act regulatory framework will result in improving or even maintaining fluvial fish populations. The proposed framework will be costly burden to water suppliers and will make truly effective water management alternatives, water supply planning and development for a water supply future nearly impossible. As conscientious environmental scientists, we cannot allow this to occur without expressing our objections.

EEA has never conducted a quantitative analysis demonstrating that the severe water restrictions embodied in the existing and proposed WMA regulations will be effective with respect to improving or even maintaining stream flows and aquatic ecosystems. We urge the Secretary to require the EEA to conduct such an analysis. This could be done for a tiny fraction of the cost of any of the studies that have already been conducted and would provide a realistic assessment of the effectiveness of the proposed regulations. EEA has all the tools it needs to make this analysis.

With deep concern for our environment and water supply future,

W. Jesse Schwalbaum, Senior Hydrogeologist,
Former SWMI Technical Committee Member

Peter Newton, Senior Hydrogeologist,
SWMI Technical Committee Member

(for DD)

Douglas DeNatale, Senior Hydrogeologist,
SWMI Technical Committee Member